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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,975	10/19/2005	Young Kyu Son	3449-0545PUS1	8239

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
MOK, ALEX W	

ART UNIT	PAPER NUMBER
2834	

NOTIFICATION DATE	DELIVERY MODE
06/01/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/553,975	SON ET AL.	
	Examiner	Art Unit	
	ALEX W. MOK	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16,18-23 and 34-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16,18-23 and 34-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/30/09 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 7, 9-14, 18-23, and 34-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayumi (US Patent No.: 6541886) in view of Braeunlein et al. (German Patent Document No.: DE 19843226 A1).

For claim 1, Mayumi discloses a stepping motor comprising a bracket (reference numeral 3, see figure 1); a housing (reference numeral 28) having a first end coupled to the bracket and a second end having a reduced width compared with the first end (reference numeral 25, figure 1), and an outer surface extending between the first and second ends (see figure 1); a stator disposed in the housing to form electric field (see

figure 1); a first supporting unit (reference numeral 42) formed on a first end of the bracket; a magnet (reference numeral 2a) fixed corresponding to the stator to provide the magnetic field; a second supporting unit (reference numeral 41, figure 1) supported on the second end of the housing; a rotor (reference numeral 2) supported by the first and second supporting units; and a stopper (reference numeral 43, figure 1) fitted on an opened end of the second end of the housing to support the second supporting unit, wherein the stopper is coupled to the outer surface of the second end of the housing (see figure 1).

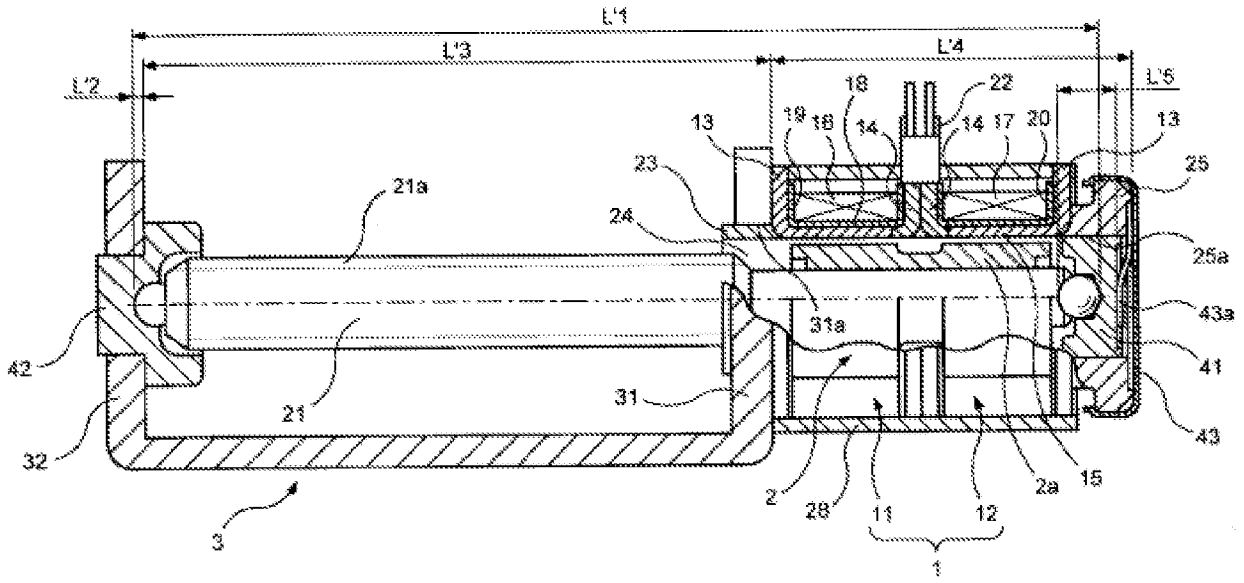

FIG. 1

Mayumi does not specifically teach an integrally formed outer surface extending between the first and second ends.

Braeunlein et al. teach a structure with an integrally formed outer surface for the housing from a first end to a second end (reference numeral 3, see figures 1a, 1b).

It would have been obvious to include this configuration, since Braeunlein et al. use this technique for improvement of the bearing assembly (see Abstract), the same problem the claimed invention is concerned with.

For claim 18, Mayumi discloses the claimed stepping motor as explained for claim 1, and Mayumi also teaches the housing having one end constituting a guide portion for guiding a second supporting unit (see figure 1), and also a third supporting unit on the bracket in which a first side of the rotor is inserted, contacting an opening portion of the housing and a first supporting unit on which a second side of the rotor is rotatably supported (figure 1). Mayumi also discloses the stopper (reference numeral 43) coupled to the outer surface of the guide portion in the radial direction of the rotor to support the second supporting unit (figure 1). Mayumi also discloses the guide portion having a smaller diameter than the housing (reference numeral 25), but does not specifically disclose the guide portion being integrally formed with the housing.

Braeunlein et al. teach a structure with an integrally formed smaller diameter portion for the housing (reference numeral 3, see figures 1a, 1b).

It would have been obvious to include this configuration, since Braeunlein et al. use this technique for improvement of the bearing assembly (see Abstract), the same problem the claimed invention is concerned with.

For claim 20, Mayumi discloses a second end of the housing having a reduced width compared with the first end (reference numeral 25), i.e. the guide portion having a reduced diameter compared with the opened portion.

For claim 23, Mayumi discloses a stopper fitted on an opened end of the second end of the housing (i.e. coupled to the guide portion) to support the second supporting unit (figure 1).

For claim 2, Mayumi discloses a third supporting unit formed on a second end of the bracket to support a point of the rotor (reference numeral 23).

For claims 3 and 21, Mayumi discloses a hooking part formed by bending the second end of the bracket (i.e. penetrating hole) and a supporting member inserted in the hooking part (reference numerals 31, 23, figures 1, 2).

For claims 4 and 19, Mayumi illustrates the housing being formed in a single body (figure 1).

For claims 5 and 22, Mayumi discloses the second supporting unit comprising a ball (see figure 1) contacting an end of the rotor; a thrust bearing (reference numeral 41) contacting the ball; and a spring (reference numeral 43a) biased between the thrust bearing and the stopper (i.e. disposed on a rear side of the thrust bearing to attenuate impact from the thrust bearing).

For claim 7, Mayumi discloses the thrust bearing contacting the second end of the housing (see figure 1).

For claims 9-11, Mayumi discloses the stopper being separately prepared and fitted on the second end of the housing (see figure 1), the stopper being cap-shaped (figure 1), and the stopper being fitted on the second end of the housing (see figure 1).

For claim 12, Mayumi discloses the first supporting unit comprising a hooking part defined by bending an end of the bracket and a bearing installed on a penetrating hole of the hooking part (reference numerals 32, 42, figure 1).

For claim 13, Mayumi discloses a pocket formed on an inner surface of the stopper (see figure 1).

For claim 14, Mayumi discloses the stator and the magnet being paired and spaced from each other (see figure 1).

For claim 34, Mayumi discloses the claimed invention except for the first end and the second end being formed of the same material. Braeunlein et al. already discloses the integrally formed housing (see figure 1a), therefore the ends would be made of the same material, and it would have been obvious to include this for the same reasons given for claim 1 above.

For claim 35, Mayumi discloses the claimed invention except for the housing having a uniform thickness. Braeunlein et al. disclose the housing having a uniform thickness (see figure 1a), and it would have been obvious to include this for the same reasons given for claim 1 above.

For claim 36, Mayumi discloses the claimed invention except for the second end being directly contacted with the outer surface. Braeunlein et al. already disclose the housing with a second end being part of the outer surface, and it would have been obvious to include this for the same reasons given for claim 1 above.

For claim 37, Mayumi discloses the claimed invention except for the housing and the guide portion being formed of the same material. Braeunlein et al. already discloses

the integrally formed housing with the guide portion (see figure 1a), therefore the housing and the guide portion would be made of the same material, and it would have been obvious to include this for the same reasons given for claim 18 above.

For claim 38, Mayumi discloses the claimed invention except for the housing and the guide portion having a uniform thickness. Braeunlein et al. disclose the housing with the guide portion having a uniform thickness (see figure 1a), and it would have been obvious to include this for the same reasons given for claim 1 above.

For claim 39, Mayumi discloses the claimed invention except for the guide portion being directly contacted with the housing. Braeunlein et al. already disclose the housing formed with the guide portion (figure 1a), and it would have been obvious to include this for the same reasons given for claim 1 above.

4. Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayumi and Braeunlein et al. as applied to claims 1 and 5 above, and further in view of Aoshima et al. (US Patent No.: 6255749).

For claim 6, Mayumi in view of Braeunlein et al discloses the claimed invention except for the spring being formed of a coil spring. Aoshima et al. disclose a stepping motor having a coil spring at the end portion (reference numeral 27, see figure 2), and it would have been obvious for a person of ordinary skill in the art to have this configuration for the purpose of improving the structure of the bearing.

For claim 16, Mayumi in view of Braeunlein discloses the claimed invention except for the second end of the housing having a diameter identical to that of a

penetrating hole formed on the bracket. It would have been obvious to have this configuration since this would involve a mere change in the size of the component which is generally recognized as an ordinary skill in the art. It also would have been obvious since Aoshima et al. illustrate a similar configuration where the penetrating hole of the bracket (reference numeral 23, figure 2) and the hole at the end of the housing both have smaller diameters than the outer diameter of the motor (see figure 2).

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mayumi in view of Braeunlein as applied to claims 1 and 5 above, and further in view of Ueno et al. (US Patent No.: 5811903).

For claim 8, Mayumi in view of Braeunlein discloses the claimed invention except for the thrust bearing being formed of synthetic resin. Ueno et al. teach a motor having bearings made of resin (see column 6, lines 61-64), and it would have been obvious for a person of ordinary skill to have this configuration of Ueno in the apparatus of Mayumi in view of Braeunlein since it would have easily been able to select a known material such as resin for its intended use as exhibited by Ueno et al.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mayumi in view of Braeunlein as applied to claim 1 above, and further in view of Atsumi et al. (US Patent No.: 5113107).

For claim 15, Mayumi in view of Braeunlein discloses the claimed invention except for having the first end of the housing be coupled to the bracket by a welding or

caulking process. Atsumi et al. disclose the housing and the bracket being welded together (see column 2, lines 35-40), and it would have been obvious for a person of ordinary skill to include this configuration for the purpose of improving the assembling precision of the bearing structure.

Response to Arguments

7. Applicant's arguments with respect to claims 1-16, 18-23, and 34-39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tate (JP 61218342 A) discloses an embodiment for the housing.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX W. MOK whose telephone number is (571)272-9084. The examiner can normally be reached on 7:30-5:00 Eastern Time, 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen P. Leung can be reached on (571) 272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen Leung/
Supervisory Patent Examiner, Art Unit 2834

/A. W. M./
Examiner, Art Unit 2834